COMMENTS OF THE

ENVIRONMENTAL DEFENSE FUND

ON THE CALFED BAY-DELTA PROGRAM PRELIMINARY WORKING DRAFT IMPLEMENTATION OBJECTIVES AND TARGETS

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The Environmental Defense Fund (EDF) applauds CalFed's continuing progress towards developing a restoration plan for the Bay-Delta-River system that is both comprehensive and based upon the premise that restoration of fundamental ecological function and structure is the best assurance of long-term success. In particular, the additional attention given to "Ecosystem Elements" has strengthened the scientific foundation of the restoration plan and will help assure its successful implementation. With this in mind, EDF offers the following comments in an effort to assist CalFed to achieve its stated goal.

In brief, we recommend that the implementation objectives and targets be refined as follows:

- To assure that the desired goal of the program is actually met, include quantitative performance criteria within each implementation objective and each associated target;
- Develop more realistic numerical objectives and targets by taking greater advantage of the scientific information already available; and
- Apply a more rigorous logical approach to situations where there is scientific uncertainty in order to minimize stakeholder disagreement regarding the steps necessary to achieve the agreed-upon ecosystem quality objectives.

In the following discussion, we expand upon these recommendations and add specific comments on the contents of the Preliminary Working Draft Implementation Objectives and Targets (hereafter Draft Plan).

Quantitative Performance Criteria

The Draft Plan's implementation objectives are qualitative and described in terms of "improvements" to various kinds of habitats and processes. The associated targets are incremental steps toward undefined endpoints, designed with feasibility in mind. There is a need for a fairly detailed, quantitative specification of ecosystem health objectives that -- if achieved -- would actually result in ecosystem health. Otherwise, there is no reason to believe that the goal of the program and the subgoals enumerated in the ecosystem quality objectives will be met, even if the implementation objectives and targets are achieved. This situation provides assurances for no one.

Optimally, two different sets of quantitative parameters should be developed. The first would be a comprehensive suite of ecological indicators designed to describe ecosystem health in an operational (quantifiable) way, such as the indicators developed through the EDF/TBI/UCB process (see Levy et al., 1996). The suite of ecological indicators, with their quantitative target ranges, would define "success" or the level of performance necessary to release water users and other economic stakeholders from further environmental obligations. In addition, measurement of these indicators would provide interim benchmarks to determine whether progress is being made toward the ultimate goal of ecosystem health.

The second set of quantitative parameters would be CalFed's implementation objectives, targets and actions. The implementation objectives would define the desired endpoint for some subset of the ecological system (e.g., maintain or restore natural stream meander processes in at least ___ miles of major and tributary rivers, sufficient to restore successional habitats, ...(list other functions)). The targets would amplify in greater detail the quantitative actions required to achieve the performance standard specified in the implementation objective. Implementation objectives and targets would be related to the desired endpoint to be achieved, not to some interim step. Actions would then describe feasible initial steps that are part of a logical process designed ultimately to achieve the targets. We strongly recommend that each action also specify a time period over which the first, interim step will be achieved.

In short, completion of certain actions, without a check on how they contribute to the achievement of ecosystem health objectives, is an inadequate measure of success. Moreover, unquantified, vague objectives and targets will invite debate.

<u>Realistic Numerical Targets</u>

In cases where the Draft Plan provides numerical targets, these appear to be far too low. We suspect that this is due to the use of methodologies that use requirements of particular species or groups of species (e.g., energy needs of ducks) as opposed to detailed descriptions of ecosystem structural and functional requirements at larger scales. Because this appears to be a methodological problem, it may well affect all of the proposed numerical targets. In cases where better methodologies have already been developed and/or where additional data is already available, we recommend that CalFed take the time to use them. In our view, the best scientific understanding should be brought to bear regarding the level of restoration necessary to achieve CalFed's goals. Stakeholder discussions can then proceed in light of this information.

Logical Approach to Scientific Uncertainty

We recommend that the following *Implementation Principles* be used toguide action at various levels of scientific uncertainty:

1. If the target or objective is quite certain, and the course of action clear, implement it immediately (e.g., remove obsolete dams).

2. If the target or objective is quite certain, but the course of action is uncertain, conduct a management experiment (e.g., investigate various methods of infilling delta islands), with targeted monitoring and research.

3. If the target or objective is uncertain, proceed along two parallel paths. First, implement any "no regrets" actions that will improve the current situation. Second, conduct directed research and monitoring to reduce uncertainty about the target and management measures needed to achieve it.

4. The larger the risk (e.g., large geographic area affected, long-lasting impact, extinction, very severe impacts) the greater the amount of uncertainty about targets and management measures should be tolerated when considering preventive or remedial measures.

5. Freeze potentially risky activities until uncertainty is reduced according to defined criteria, in order to create incentives for reducing uncertainty. Allowing status quo activities to continue creates an unfortunate (but unavoidable) incentive against doing research, since the results might jeopardize the status quo. For example, 20 years of federal legislation on toxic chemical control has yielded standards for only a tiny fraction of hazardous chemicals. However, California's Proposition 65 in only a few years produced clear, health-based, numerical standards for 282 separate chemicals (with no legal challenges or delays), based on the same scientific criteria and data as federal law, but with an incentive (labeling of products containing potential carcinogens) for the regulated community to want certainty instead of ambiguity.

Specific Comments

p. 2. It is important to clarify that use of artificial support (e.g., hatcheries) must be regarded as a last resort and be consistent with the goal of preventing the adverse genetic, ecological, and management impacts to native species and ecosystems that have been well documented for hatcheries.

p. 5. Two primary CalFed criteria seem to be that objectives are accepted by all stakeholders and targets are practical. Is there no criterion for effectiveness for achieving overall goal of ecosystem health? This is the most important criterion of all.

p. 5. "Targets will be tested and revised through the adaptive-management process of ERPP. The public workshop on November 19, comments submitted on this report from the stakeholders and agencies, and follow-up technical meetings will initiate the refinement process." This sounds like adaptive management is equivalent to vetting targets with stakeholders, agencies, and technical experts -- rather than well- designed management experiments designed to maximize benefits and reduce uncertainty.

pp. 11-12. The important ecological processes to be restored/improved have been identified, we think. There are, however, some inconsistencies. Some of the "objectives" are cast as objectives (e.g., A.1.a: increase amount of quality riverine edge habitat) and some are cast as strategies (e.g., A.3.b.: reduce water hyacinth populations); some include both objective and strategy (e.g., A.2.b: increase amount of large woody debris along delta levees to allow juvenile and adult feeding and refuge for sustainable populations of fish) while others lack one or the other (e.g., A.6.a. enhance upstream migration of adult salmonids through the delta).

pp. 13-14. The attention given to connectivity is commendable.

p. 14. Item B.2.d. "Reduce the vulnerability of existing freshwater marshes to levee failures". Does this amount to protecting managed marshes from tidal inundation? If so, does this make sense ecologically and economically, in terms of costs and benefits?

pp. 19-20. The descriptions of key physical processes and the rationales for choosing them are good.

p. 22. Thedescription of factors influencing water temperature is a bit misleading: it should include both natural processes and human modifications (e.g., removal of shade trees in the riparian zone, dam releases, etc.).

Table 8. p. 1. A. An explanation should be provided of the rationale for choosing a mid-1960's baseline for hydraulic conditions and striped bass export loss rates (Table 10, p. 4) to be restored

Table 8. p. 2. A.2. Sediment loadings might have to be increased substantially to not only maintain wetlands, but to build new wetlands (e.g., in Delta islands) and to maintain wetlands against flooding and erosion due to accelerated sea level rise expected over the next century due to global warming.

Table 9. p. 1. A.2. Is there any information available on the minimum spacing between nodes of habitat and minimum size of nodes needed to support fish populations?

Table 9. p. 3. Increasing nutrient levels may not increase primary production. Primary production could be light-limited in some areas.

Table 10. p. 3. Stronger measures to prevent introduction of exotics are needed. This is generally an all or nothing proposition: removing 10% of an exotic species is unlikely to accomplish much.

Table 10 p. 4. The removal of some dams should be an option.

Table 10. p. 5. It isunclear how loss of fish due to stranding or blocked will be reduced (screening?).

Table 10. p. 5-6. Some gravel pits may have to be filled.

Table 10. p. 6. Careful wording about toxic concentrations and loadings is needed. The objective should be to reduce loads, concentrations and bioaccumulation, not just to reduce concentrations.

Table 10. p. 7. We suggest re-casting the objective about harvest in more positive terms: e.g., "Restore sustainable, economically viable commercial and sport fisheries".

Table 10., p.8. Hatcheries should be used only as a last resort, and when used, goals and operations should be based on the best available science to minimize negative impacts on wild populations. These negative impacts include not only genetic and ecological impacts (introgression, disease introduction, competition, interference with normal reproduction, etc.), but also management impacts: highly productive hatchery stocks that mix with weak or recovering wild stocks create very strong incentives to harvest the mixed stock at high rates, subverting recovery efforts.

Tables 11 and 12. A rationale should be provided for these numbers. they seem low. Is this part of adaptive management strategy with different patch sizes to test for minimum patch size? Are these increments toward an overall, more ambitious target?

Table 12. p 1. We suggest replacing salmon run size targets with implementable targets for egg production and freshwater survival rates.

Table 12, p 3. We suggest re-wording the objective about splittail harvest to something more positive, e.g., "Rebuild the splittail population to levels that can sustain a fishery"